



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,071	09/29/2004	Anthony F. Scian	555255012408	4276
24325	7590	10/10/2007	EXAMINER	
PATENT GROUP 2N			ZHEN, LI B	
JONES DAY				
NORTH POINT				
901 LAKESIDE AVENUE				
CLEVELAND, OH 44114				
			ART UNIT	PAPER NUMBER
			2194	
			MAIL DATE	DELIVERY MODE
			10/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/510,071

Applicant(s)

SCIAN ET AL.

Examiner

Li B. Zhen

Art Unit

2194

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 8/14/2006;9/29/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1 – 10 are pending in the application.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 9 and 10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 9 is drawn to a system comprising a class interface check data structure and class interface dispatch data structure. In view of Applicant's disclosure, specification page 26, lines 9 – 13, the data structures are contained in memory as well as transmitted via data signals embodied on carrier signals. Thus, the data structure is not limited to being stored on storage medium embodiments. As such, the claim is not limited to statutory subject matter and is therefore non-statutory. To overcome this type of 101 rejection the claims need to be amended to recite the data structure as only being stored on physical computer media (e.g., storage media) and not transmitted via data signals embodied on carrier signals.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2194

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 – 10 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,941,550 to Sollich.

6. As to claim 1, Sollich teaches a method for handling runtime objects [col. 2, line 62 – col. 3, line 2] operating on a wireless device [col. 13, lines 5 – 11], wherein the runtime objects are instantiations of classes [col. 6, lines 53 – 65], wherein a class can implement an object-oriented interface having methods [col. 4, lines 8 – 25], comprising the steps of:

assigning, for a class, an interface ordinal to an interface based upon a relationship [col. 2, lines 37 – 62] existing between the class and the interface [a new interface is encountered, it is assigned a unique identification number and a new index number by an interface index component 12; col. 5, lines 20 – 35];

associating with at least one interface ordinal a reference that points to an interface implemented by a class [method tables for the proxy objects all point a common interface map or vector that contains entries for all interfaces for COM objects; col. 8, lines 15 – 35];

assigning, for a class, a method ordinal [offset] to an interface's' method based upon a relationship existing between the class and the method [offset is then used to

Art Unit: 2194

locate the address of the method in the interface; col. 11, lines 16 – 33 and col. 9, lines 33 – 60];

associating with at least one method ordinal a reference that points to a method of an interface [index number offset can be retrieved from an interface index; col. 9, lines 33 – 60];

wherein an assigned interface ordinal and an associated reference are to be used to check whether a runtime object operating on the wireless device is an instantiation of an interface [checking that the interface map entry for that interface and class does indeed point within the virtual table for the class; col. 10, lines 12 – 33];

wherein an assigned method ordinal and an associated method reference are to be used to perform a dispatch of an interface's method implemented by the runtime object [interface dispatching taking in the special considerations when a first interface map has filled up in addition to the special situation of dealing with COM components; col. 8, lines 35 – 49].

7. As to claim 9, Sollich teaches a system for handling runtime objects [col. 2; line 62 – col. 3, line 2] operating on a wireless device [col. 13, lines 5 – 11], wherein the runtime objects are instantiations of classes [col. 6, lines 53 – 65], wherein a class can implement an object-oriented interface having methods [col. 4, lines 8 – 25], comprising:

class interface check data structure [col. 10, lines 12 – 33], wherein the class interface check data structure stores associations between interface ordinals [a unique identification number and a new index number by an interface index component 12; col.

Art Unit: 2194

5, lines 20 – 35] and references to interfaces [col. 8, lines 15 – 35], wherein the ordinals were assigned to interfaces such that a first constraint is substantially satisfied [class type A 20 implements interface 0 and interface 2 and class type B 22 implements interface 0 and interface 3; col. 5, lines 33 – 50], wherein the first constraint provides that two interfaces are assigned different interface ordinals if there exists a class that implements both of the interfaces [When a new interface is encountered, it is assigned a unique identification number and a new index number by an interface index component 12; col. 5, lines 20 – 35];

class interface dispatch data structure, wherein the class interface dispatch data structure stores associations between method ordinals [offset] and references to methods [offset is then used to locate the address of the method in the interface; col. 11, lines 16 – 33 and col. 9, lines 33 – 60], wherein the ordinals were assigned to methods such that a second constraint was substantially satisfied [method table 167 for class type X and the method table 169 for class type Y; col. 8, lines 47 – 65], wherein the second constraint provides that two methods have different method ordinals if there exists a class that implements both of the methods [initializes other data unique to each instance at offsets relative to the method table reference; col. 8, lines 47 – 64];

wherein the class interface check data structure is to be used to check whether a runtime object operating on the wireless device is an instantiation of an interface [checking that the interface map entry for that interface and class does indeed point within the virtual table for the class; col. 10, lines 12 – 33];

wherein the class interface dispatch data structure is to be used to perform a dispatch of an interface's method implemented by the runtime object [interface dispatching taking in the special considerations when a first interface map has filled up in addition to the special situation of dealing with COM components; col. 8, lines 35 – 49].

8. As to claim 2, Sollich teaches a direct interface check is performed to verify if the runtime object can be cast into the type of an interface by performing steps comprising: providing class data for the runtime object in order to determine what class type provided the constructor for the runtime object [col. 8, lines 47 – 65]; using the interface ordinals' association with the interface references to check whether the runtime object is an instance of an interface [col. 10, lines 12 – 33].

9. As to claim 3, Sollich teaches a dispatch is performed by performing steps comprising: providing class data for the runtime object in order to determine what class type provided the constructor for the runtime object [col. 8, lines 47 – 65]; using the method ordinals association with the method references to directly dispatch the method [col. 8, lines 35 – 49].

10. As to claim 4, Sollich teaches a compiler system [pre-execution engine can be a loader, a linker, a compiler, an interpreter or a JIT (Just-In-Time) compiler; col. 4, lines 36 – 58] generates check and dispatch information based upon an input set of classes

Art Unit: 2194

and set of interfaces [pre-execution engine 18 creates a method table 21 for class type A and a method table 23 for type B; col. 4, line 65 – col. 5, line 20], wherein the check and dispatch information includes the interface ordinals [col. 5, lines 20 – 35], the interface references associated with the interface ordinals [col. 8, lines 15 – 35], the method ordinals [col. 11, lines 16 – 33 and col. 9, lines 33 – 60], and the method references associated with the method ordinals [col. 9, lines 33 – 60], wherein the wireless device [col. 13, lines 5 – 11] includes runtime storage to store on the wireless device the assigned interface ordinals and their associated interface references [col. 8, lines 15 – 35].

11. As to claim 5, Sollich teaches the runtime storage stores on the wireless device the assigned method ordinals and their associated method references [col. 8, lines 15 – 35].

12. As to claim 6, Sollich teaches the runtime storage comprises runtime context which includes objects for which a direct check is performed and includes method calls on objects for which a direct dispatch is performed [col. 3, line 55 – col. 4, line 8].

13. As to claim 7, Sollich teaches the wireless device includes a runtime processor and operates within a Java-based computer environment [JIT (Just-In-Time) compiler; col. 4, lines 37 – 58], wherein an assigned interface ordinal and an associated reference are to be used by the runtime processor to check whether a runtime object operating on

Art Unit: 2194

the wireless device is an instantiation of an interface [col. 10, lines 12 – 33]; wherein an assigned method ordinal and an associated method reference are to be used by the runtime processor to perform a dispatch of an interface's method implemented by the runtime object [col. 8, lines 35 – 49].

14. As to claim 8, Sollich teaches a method call on the wireless device is used as a trigger to invoke a direct check and direct dispatch using the check and dispatch information [col. 8, lines 35 – 49 and col. 10, lines 12 – 33].

15. As to claim 10, Sollich teaches a compiler system that assigns the ordinals to interfaces such that the first constraint is substantially satisfied [col. 4, lines 36 – 58], wherein the compiler assigns the ordinals to methods such that the second constraint is substantially satisfied [col. 8, lines 47 – 64].

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,651,248 discloses an interface method invocation mechanism for interface method dispatch.

U.S. Patent No. 7,058,929 discloses a system of direct invocation of Methods using class loaders.

Art Unit: 2194

CONTACT INFORMATION

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li B. Zhen whose telephone number is (571) 272-3768.

The examiner can normally be reached on Mon - Fri, 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Thomson can be reached on 571-272-3718. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Li B. Zhen
Examiner
Art Unit 2194

LBZ



9/29/2007